

PROTOCOL COMMAND LIST

HVS-39ED

Editor Interface BVS/DVS Support Protocol

Version 1.00.0 - Higher

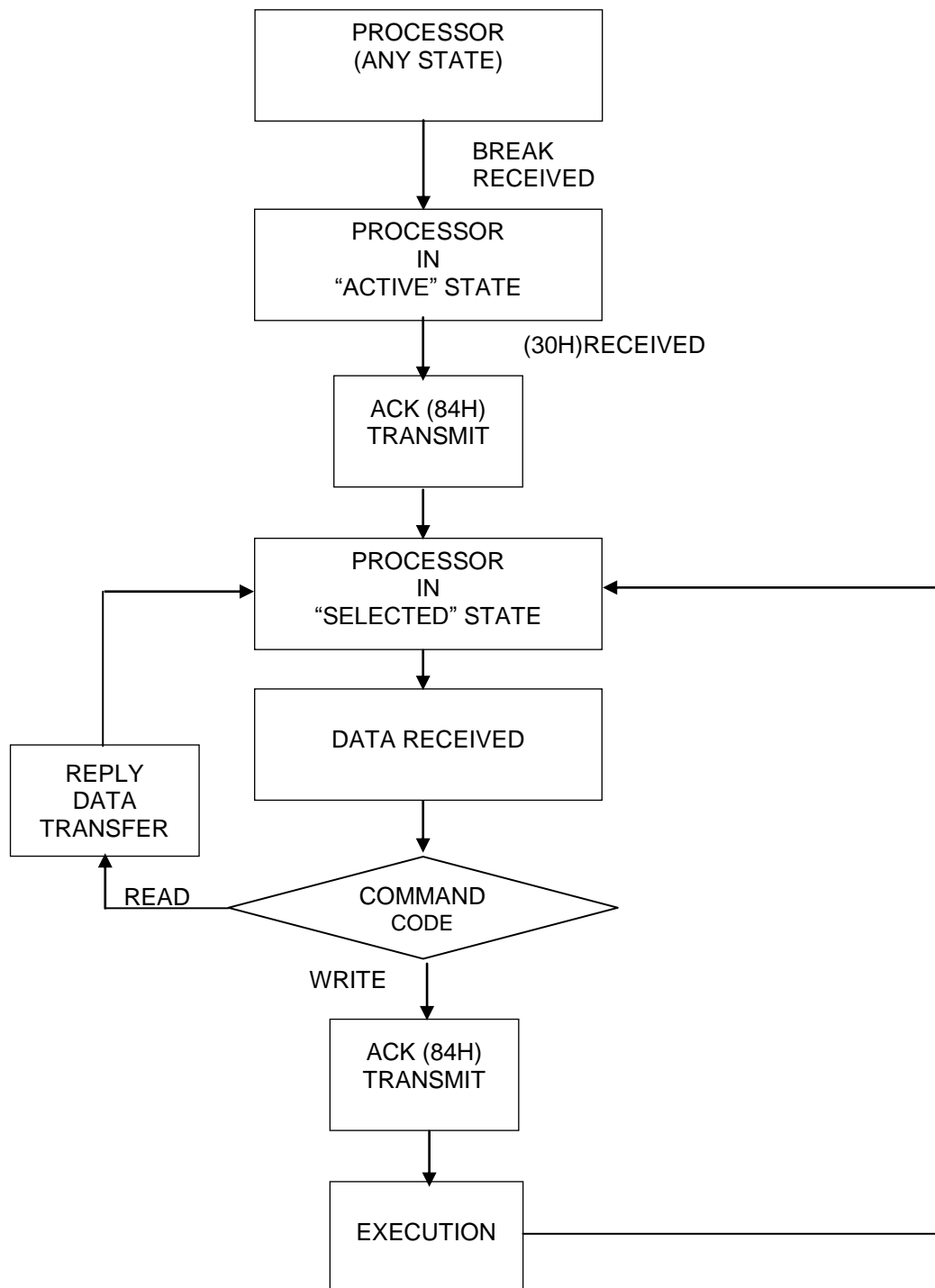
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1. PROTOCOL

The protocol complies with the STD SONY PROTOCOL and supports features described in this paper.

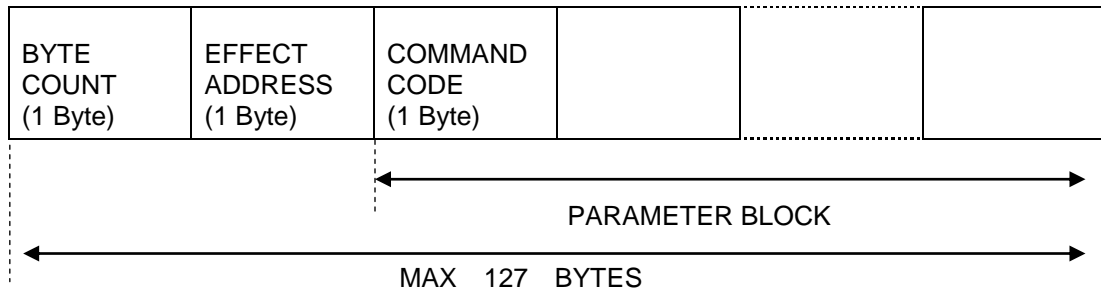
2. State Transition Diagram



* Be sure to **wait until a reply is received** before sending the next command when sending multiple consecutive commands. The commands may otherwise execute improperly.

* In principle, **do not send more than one** command within one field.

3. Command Format



Commands used between CONSOLE and EDITOR when PROCESSOR is in the "SELECTED" state, are composed as shown above.

3-1. Command Details

- To read status values, send **READ** commands.
- Return messages from READ commands use the same format as WRITE commands.
- To execute or set values, send **WRITE** commands.

Ex.) Crosspoint Command

	BYTE1	BYTE2	BYTE3	BYTE4
READ	02	EFF	00	-
WRITE	03	EFF	80	XX

(READ command return messages)

BYTE 1 Set a BYTE COUNT value, which is the sum of the following three items:
 EFFECT ADDRESS (1 Byte)
 COMMAND CODE (1 Byte)
 PARAMETER BLOCK (X Byte)

BYTE 2 Set an EFFECT ADDRESS value (See the EFFECT ADDRESS table on the next page and Section 5 for details on each command).

BYTE 3 Set a COMMAND CODE. See section 5 for each command.

BYTE 4 Add parameters, if necessary.
 | See "BYTE 4 Details" below.

BYTE X The number of bytes in a parameter block varies depending on commands.

Ex.) BYTE 4 Details

Bit No.	7	6	5	4	3	2	1	0
BYTE 4	0							

XPT No. 00-3F (Hex)

{ "0": w/o modifications
 "1": w/ modifications

The BYTE COUNT value and the byte number of data issued must be the same. If an incorrect value is set, the commands will not be properly received until the BREAK command is received.

4. EFFECT ADDRESS

The table below shows the relationship between the Effect Addresses and command entities. Numbers in the table are given in hexadecimal (hereafter called Hex).

EFFECT ADDRESS (Hex)	DESCRIPTION
00	PP ROW (2.5 M/E only)
01	ME 1 ROW
02	ME 2 ROW
03-20	(NOT USED)
21	EVENET MEMORY
22-2F	(NOT USED)
30	AUX1
31	AUX2
32	AUX3
33	AUX4
34	AUX5
35	AUX6
36	AUX7
37	AUX8
38-3E	(NOT USED)
3F	EDIT PREV (AUX1)
40-FF	(NOT USED)

5. COMMAND CODE and PARAMETER

5-1. CROSSPOINT

Return messages from READ commands use the same format as WRITE commands.

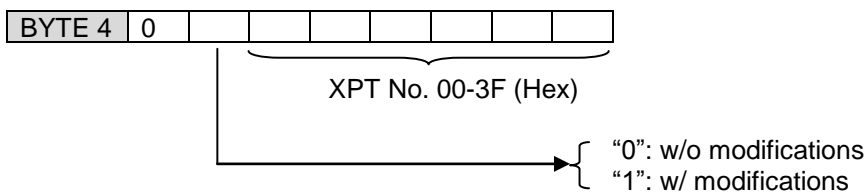
EFFECT ADDRESS (BYTE 2) in CROSSPOINT type commands is used for M/E selection.

BYTE 2	00 (Hex)	PP 1 ROW (2.5M/E only)
BYTE 2	01 (Hex)	ME 1 ROW
BYTE 2	02 (Hex)	ME 2 ROW

A) BKGD A BUS

Reads / writes the background A bus signal.

	BYTE1	BYTE2	BYTE3	BYTE4
READ	02	EFF	00	-
WRITE	03	EFF	80	XX

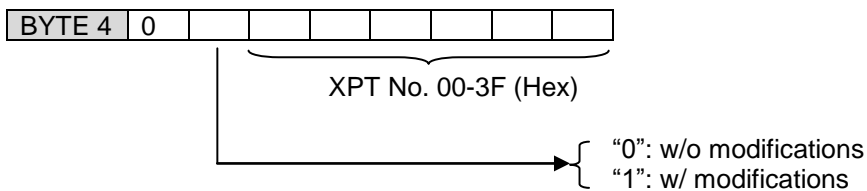


If the bus is not modified, set the crosspoint number described in Table 1 (page 9) in BYTE 4.
 If the bus is modified, set the crosspoint number described in Table 2 (page 10) in BYTE 4.

B) BKGD B BUS

Reads / writes the background B bus signal.

	BYTE1	BYTE2	BYTE3	BYTE4
READ	02	EFF	01	-
WRITE	03	EFF	81	XX

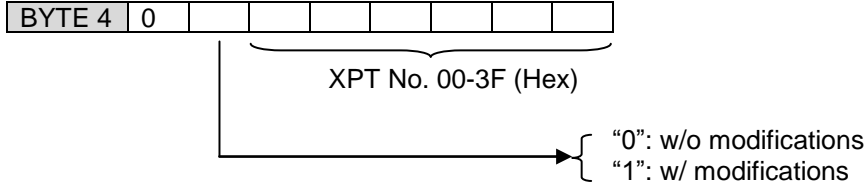


If the bus is not modified, set the crosspoint number described in Table 1 (page 9) in BYTE 4.
 If the bus is modified, set the crosspoint number described in Table 2 (page 10) in BYTE 4.

C) KEY 1 BUS

Reads / writes a KEY 1 INSERT signal.

	BYTE1	BYTE2	BYTE3	BYTE4
READ	02	EFF	07	-
WRITE	03	EFF	87	XX



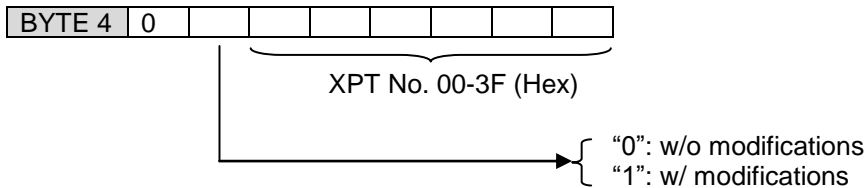
If the bus is not modified, set the crosspoint number described in Table 1 (page 9) in BYTE 4.
If the bus is modified, set the crosspoint number described in Table 2 (page 10) in BYTE 4.

To set KEY INSERT to MATT, use KEY MATT ON/OFF commands. LUMINANCE KEY and BUS KEY commands allow you to set the key type. (p 15).

D) KEY 2 BUS

Reads / writes a KEY 2 INSERT signal.

	BYTE1	BYTE2	BYTE3	BYTE4
READ	02	EFF	0D	-
WRITE	03	EFF	8D	XX



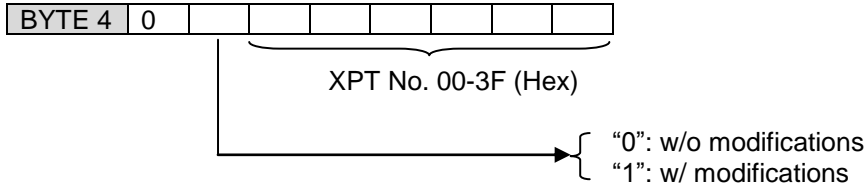
If the bus is not modified, set the crosspoint number described in Table 1 (page 9) in BYTE4.
If the bus is modified, set the crosspoint number described in Table 2 (page 10) in BYTE4.

To set KEY INSERT to MATT, use KEY MATT ON/OFF commands. LUMINANCE KEY and BUS KEY commands allow you to set the key type. (p 15).

E) KEY 3 BUS

Reads / writes a KEY 3 INSERT signal.

	BYTE1	BYTE2	BYTE3	BYTE4
READ	02	EFF	09	-
WRITE	03	EFF	89	XX



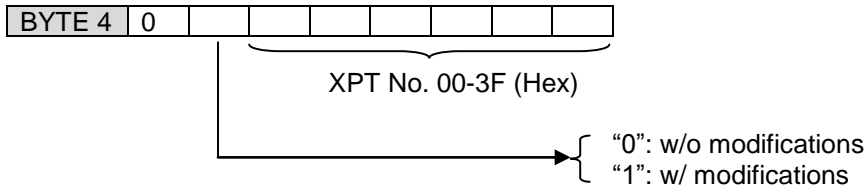
If the bus is not modified, set the crosspoint number described in Table 1 (page 9) in BYTE 4.
If the bus is modified, set the crosspoint number described in Table 2 (page 10) in BYTE 4.

To set KEY INSERT to MATT, use KEY MATT ON/OFF commands. LUMINANCE KEY and BUS KEY commands allow you to set the key type. (p 15).

F) KEY 4 BUS

Reads / writes a KEY 4 INSERT signal.

	BYTE1	BYTE2	BYTE3	BYTE4
READ	02	EFF	0B	-
WRITE	03	EFF	8B	XX



If the bus is not modified, set the crosspoint number described in Table 1 (page 9) in BYTE 4.
If the bus is modified, set the crosspoint number described in Table 2 (page 10) in BYTE 4.

To set KEY INSERT to MATT, use KEY MATT ON/OFF commands. LUMINANCE KEY and BUS KEY commands allow you to set the key type. (p 15).

Table 1
Crosspoint Number w/o Modifications

No.(Hex)	CROSSPOINT	No.(Hex)	CROSSPOINT
0	XPT_BLACK	20	XPT_STILL_04
1	XPT_BNC_01	21	XPT_STILLKEY_01
2	XPT_BNC_02	22	XPT_STILLKEY_02
3	XPT_BNC_03	23	XPT_STILLKEY_03
4	XPT_BNC_04	24	XPT_STILLKEY_04
5	XPT_BNC_05	25	COLORBAR
6	XPT_BNC_06	26	XPT_MATTE1
7	XPT_BNC_07	27	XPT_MATTE2
8	XPT_BNC_08	28	XTP_ME1 (*3)
9	XPT_BNC_09	29	XPT_ME2 (*4)
0A	XPT_BNC_10	2A	XPT_ME1_PGM(*1)
0B	XPT_BNC_11	2B	XPT_ME1_PREV(*1)
0C	XPT_BNC_12	2C	XPT_ME1_CLN(*1)
0D	XPT_BNC_13	2D	XPT_ME1_KEY(*1)
0E	XPT_BNC_14	2E	XPT_ME2_PGM(*1)
0F	XPT_BNC_15	2F	XPT_ME2_PREV(*1)
10	XPT_BNC_16	30	XPT_ME2_CLN(*1)
11	XPT_BNC_17	31	XPT_ME2_KEY(*1)
12	XPT_BNC_18	32	XPT_PP_PGM(*2)
13	XPT_BNC_19	33	XPT_PP_PREV(*2)
14	XPT_BNC_20	34	XPT_PP_CLN(*2)
15	XPT_BNC_21	35	XPT_PP_KEY(*2)
16	XPT_BNC_22	36	XPT_MultiViewer1(*1)
17	XPT_BNC_23	37	XPT_MultiViewer2(*1)
18	XPT_BNC_24	38	
19		39	
1A		3A	
1B		3B	
1C		3C	
1D	XPT_STILL_01	3D	
1E	XPT_STILL_02	3E	
1F	XPT_STILL_03	3F	

(*1) Active only for AUX control commands.

(*2) Available only when HVS-390HS is configured as a 2.5M/E switcher and controls AUX buses.

(*3) M/E1 re-entry video. Available for BKGD and KEY on M/E2 or P/P.

(*4) M/E2 re-entry video. Available for BKGD and KEY on P/P.

Table 2
Crosspoint Number w/ Modifications

No.(Hex)	CROSSPOINT	No.(Hex)	CROSSPOINT
0	XPT_BLACK	20	
1	XPT_BLACK	21	
2	XPT_MATTE1	22	
3	XPT_MATTE2	23	
4		24	
5	XPT_COLORBAR	25	
6		26	
7	XPT_PP_PGM (*2)	27	
8	XPT_PP_CLN (*2)	28	
9	XPT_ME1_PGM (*1)	29	
0A	XPT_ME2_PGM (*1)	2A	
0B		2B	
0C		2C	
0D	XPT_PP_KEY (*2)	2D	
0E		2E	
0F	XPT_ME1_KEY (*1)	2F	
10	XPT_ME2_KEY (*1)	30	XPT_ME1_CLN (*1)
11		31	XPT_ME2_CLN (*1)
12	XPT_PP_PREV (*2)	32	
13	XPT_ME1_PREV (*1)	33	
14	XPT_ME2_PREV (*1)	34	
15		35	
16		36	
17		37	
18		38	
19		39	
1A		3A	
1B		3B	
1C		3C	
1D		3D	
1E		3E	
1F		3F	

(*1) Active only for AUX control commands.

(*1) Active only for AUX control commands in 2.5 M/E (HVS-390HS)

5-2. TRANSITION

TRANSITION command EFFECT ADDRESS (BYTE 2) is used for M/E selection.

BYTE 2	00 (Hex)	PP 1 ROW (2.5M/E only)
BYTE 2	01 (Hex)	ME 1 ROW
BYTE 2	02 (Hex)	ME 2 ROW

G) TRANSITION MODE

Selects a bus(es) to be controlled.

	BYTE1	BYTE2	BYTE3	BYTE4	BYTE5
WRITE	03/04	EFF	90	XX	(XX)

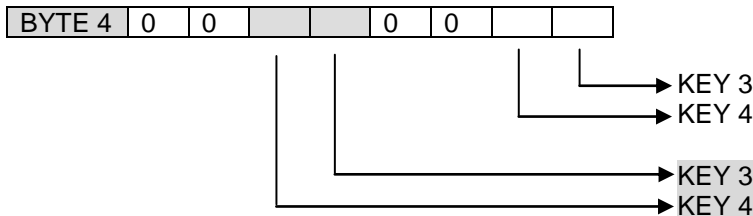
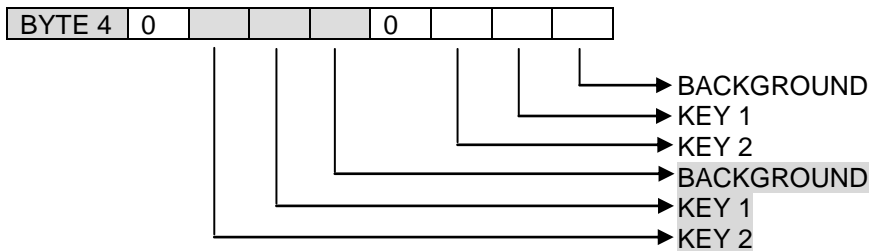
BYTE 4 and 5 are used to specify a bus(es) to be controlled.

To select buses from BKGD and **KEY1-2**, set BYTE 1 to "03" (Hex) and select a bus (buses) using **BYTE 4**.

To select buses from BKGD and **KEY1-4**, set BYTE 1 to "04" (Hex) and select a bus (buses) using **BYTE 4** and **BYTE 5**

Setting to "1" for each bit (see below) activates the corresponding bus transition.

Setting to "1" for a shaded bit (bus) also activates the bus that is activated by the previous TRANSITION MODE command.



H) TRANSITION TYPE

Selects the transition type for the bus selected by the TRANSITION MODE command.

	BYTE1	BYTE2	BYTE3	BYTE4
WRITE	03	EFF	91	XX

BYTE 4	0	0	0	0	0	0	1	0	MIX
BYTE 4	0	0	0	0	0	1	0	0	WIPE
BYTE 4	0	0	0	0	1	0	0	0	NAM
BYTE 4	0	0	0	1	0	0	0	0	FAM

I) AUTO TRANS START

Executes an AUTO transition for the bus selected by the TRANSITION MODE command.

	BYTE1	BYTE2	BYTE3
WRITE	02	EFF	96

The switcher performs one of the following three operations depending on the state of transition when an AUTO TRANSITION START command is received.

- a) Stops the transition when the AUTO TRANSITION is being processed.
- b) Resumes the TRANSITION when an AUTO TRANSITION is paused.
- c) Restarts the TRANSITION from the beginning in cases other than a) or b).

J) AUTO TRANS START with TRANS RATE

Sets the transition rate for the bus selected by the TRANSITION MODE command and executes an AUTO transition. Specify the transition rate using BYTE 4 and BYTE 5.

	BYTE1	BYTE2	BYTE3	BYTE4	BYTE5
WRITE	04	EFF	96	XX	XX

BYTE 4	0	0	0	0				

TRANSITION RATE (100s place value)

BYTE 5								

TRANSITION RATE (1s place value)

TRANSITION RATE (10s place value)

K) ALL STOP

Terminates background and key transitions and resets all buses as shown below.

To set keys to Off-air, set BYTE 4 as shown below.

	BYTE1	BYTE2	BYTE3	BYTE4
WRITE	03	EFF	97	XX

BYTE 4	X	X	X	1	0	0	0	0	KEY 1 OFF
BYTE 4	X	X	1	X	0	0	0	0	KEY 2 OFF
BYTE 4	X	1	X	X	0	0	0	0	KEY 3 OFF
BYTE 4	1	X	X	X	0	0	0	0	KEY 4 OFF

If an ALL STOP command is received:

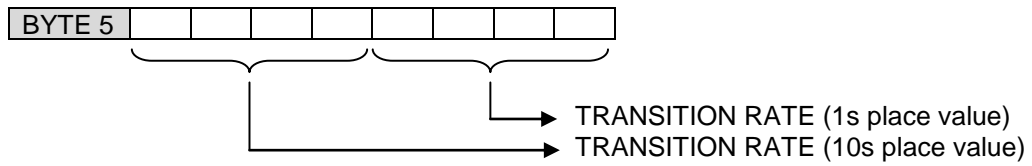
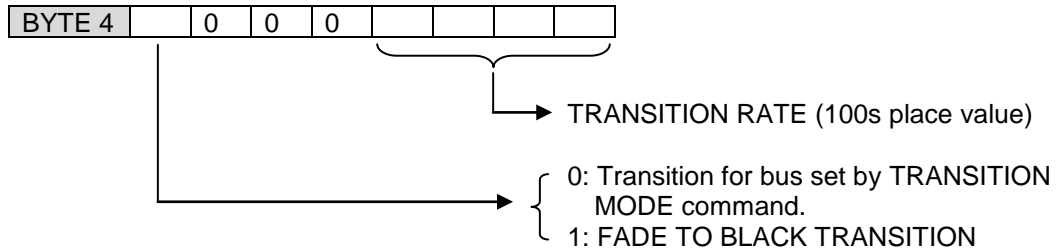
- All bus transitions immediately stop.
- PGM bus turns into A bus.
- KEY1-4 can be set to Off-air. (See BYTE 4 settings above.)
- Transition type changes to MIX.

Wait at least 1 V (16 msec) until the next command is sent after performing an ALL STOP.

L) AUTO TRANS RATE

Sets the transition rate for the bus selected by the TRANSITION MODE command, or sets the BLACK transition rate.

	BYTE1	BYTE2	BYTE3	BYTE4	BYTE5
WRITE	04	EFF	98	XX	XX



5-3. WIPE

WIPE command EFFECT ADDRESS (BYTE 2) is used for M/E selection.

BYTE 2	00 (Hex)	PP 1 ROW (2.5M/E only)
BYTE 2	01 (Hex)	ME 1 ROW
BYTE 2	02 (Hex)	ME 2 ROW

M) WIPE PATTERN

Determines the WIPE transition pattern number.

	BYTE1	BYTE2	BYTE3	BYTE4	BYTE5	BYTE6
WRITE	05	EFF	9B	00	XX	XX

BYTE 5	1000s place value	100s place value
--------	-------------------	------------------

BYTE 6	10s place value	1s place value
--------	-----------------	----------------

N) DIRECTION

Determines the WIPE PATTERN direction .

	BYTE1	BYTE2	BYTE3	BYTE4	BYTE5
WRITE	04	EFF	9B	04	XX

BYTE 5	0	0	0	0	0	0	0	1	NOR/REV
BYTE 5	0	0	0	0	0	0	1	0	NORMAL
BYTE 5	0	0	0	0	0	1	0	0	REVERSE

5-4. KEY

KEY command EFFECT ADDRESS (BYTE 2) is used for M/E selection.

BYTE 2	00 (Hex)	PP 1 ROW (2.5M/E only)
BYTE 2	01 (Hex)	ME 1 ROW
BYTE 2	02 (Hex)	ME 2 ROW

O) KEY

Sets KEY to ON/OFF regardless of AUTO TRANS START commands.

		BYTE1	BYTE2	BYTE3	BYTE4
READ		03	EFF	1A	XX
WRITE	ON	03	EFF	DA	XX
	OFF	03	EFF	9A	XX

Return messages from READ commands use the same format as WRITE commands.

BYTE 4	0	0	0	1	0	0	0	0	KEY 1
BYTE 4	0	0	1	1	0	0	0	0	KEY 2
BYTE 4	0	1	0	1	0	0	0	0	KEY 3
BYTE 4	0	1	1	1	0	0	0	0	KEY 4

P) KEY MATT ON/OFF

Sets whether a matte is used for the key insert source (in BYTE 5).

	BYTE1	BYTE2	BYTE3	BYTE4	BYTE5
WRITE	04	EFF	9A	XX	XX

Select a key in BYTE 4.

BYTE 4	0	0	0	0	0	0	0	0	KEY1
BYTE 4	0	0	1	0	0	0	0	0	KEY2
BYTE 4	0	1	0	0	0	0	0	0	KEY3
BYTE 4	0	1	1	0	0	0	0	0	KEY4

BYTE 5	0	0	0	0	0	0	0	1	OFF
BYTE 5	0	0	0	0	0	0	1	0	ON (KEY MATT)

Q) LUMINANCE KEY

Sets the key type to LUMINANCE.

	BYTE1	BYTE2	BYTE3	BYTE4	BYTE5
WRITE	04	EFF	9A	XX	02

Select a key in BYTE 4.

BYTE 4	0	0	0	0	0	0	0	1	KEY1
BYTE 4	0	0	1	0	0	0	0	1	KEY2
BYTE 4	0	1	0	0	0	0	0	1	KEY3
BYTE 4	0	1	1	0	0	0	0	1	KEY4

R) BUS KEY

Sets the key type to BUS and selects the KEY SOURCE signal.

	BYTE1	BYTE2	BYTE3	BYTE4	BYTE5	BYTE6
WRITE	05	EFF	9A	XX	01	XX

Select a key in BYTE 4.

BYTE 4	0	0	0	0	0	0	0	1	KEY1
BYTE 4	0	0	1	0	0	0	0	1	KEY2
BYTE 4	0	1	0	0	0	0	0	1	KEY3
BYTE 4	0	1	1	0	0	0	0	1	KEY4

Select the KEY SOURCE signal in BYTE 6.

BYTE 6	0							
--------	---	--	--	--	--	--	--	--

XPT No. 00-3F (Hex)

“0”: w/o modifications
“1”: w/ modifications

If the bus is not modified, set the crosspoint number described in Table 1 (page 9) in BYTE 6.
If the bus is modified, set the crosspoint number described in Table 2 (page 10) in BYTE 6.

KEY INSERT signals can be selected by CROSSPOINT type commands (C) to (F).

5-5. AUX BUS

S) Crosspoints (AUX1-8)

Reads/writes an AUX bus signal.

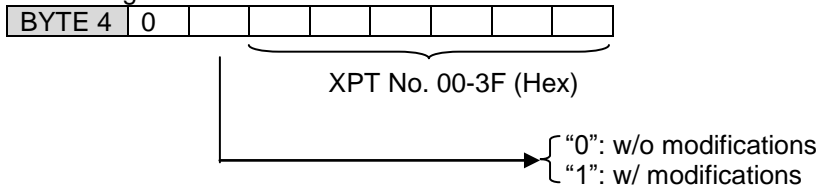
	BYTE1	BYTE2	BYTE3	BYTE4
READ	02	EFF	00	-
WRITE	03	EFF	80	XX

Return messages from READ commands use the same format as WRITE commands.

Crosspoints (AUX1-8) command EFFECT ADDRESS (BYTE 2) is used for AUX bus selection.

BYTE 2	30 (Hex)	AUX 1
BYTE 2	31 (Hex)	AUX 2
BYTE 2	32 (Hex)	AUX 3
BYTE 2	33 (Hex)	AUX 4
BYTE 2	34 (Hex)	AUX 5
BYTE 2	35 (Hex)	AUX 6
BYTE 2	36 (Hex)	AUX 7
BYTE 2	37 (Hex)	AUX 8
BYTE 2	3F (Hex)	EDIT PREV (AUX 1)

Select a signal in BYTE 4.



If the bus is not modified, set the crosspoint number described in Table 1 (page 9) in BYTE 4.
 If the bus is modified, set the crosspoint number described in Table 2 (page 10) in BYTE 4.

5-6. Event Memory

T) SAVE

The current switcher settings are stored in the event memory specified at BYTE 5.

	BYTE1	BYTE2	BYTE3	BYTE4	BYTE5
WRITE	04	21	80	01	XX

BYTE 5							
--------	--	--	--	--	--	--	--

Registry Number (0-99)

U) RECALL

The switcher settings are recalled from the event memory specified at BYTE 5.

	BYTE1	BYTE2	BYTE3	BYTE4	BYTE5
WRITE	04	21	90	01	XX

BYTE 5							
--------	--	--	--	--	--	--	--

Registry Number (0-99)

5-7. System Control

V) STATUS REPORT

Reads / sets the STATUS REPORT setting.

	BYTE1	BYTE2	BYTE3	BYTE4
READ	02	20	01	
WRITE	03	20	81	XX

Set to ON or OFF in BYTE4.

BYTE 4	0	0	0	0	0	0	0	0	0	OFF (default)
BYTE 4	0	0	0	0	0	0	0	0	1	ON

< Status Report >

If STATUS REPORT is set to **ON**, the following command messages are automatically sent in each WRITE format from the switcher whenever a crosspoint or transition setting is changed.

Command Message	Refer to Page	Refer to Section
A) BKGD A BUS	6	5-1. CROSSPOINT
B) BKGD B BUS	6	
C) KEY 1 BUS	7	
D) KEY 2 BUS	7	
E) KEY 3 BUS	8	
F) KEY 4 BUS	8	
S) CROSSPOINTS (AUX1-8)	16	5-5. AUX BUS
G) TRANSITION MODE	11	5-2. TRANSITION



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